

SEQUENCE LISTING

<110> Chen, Hongyun
Le Bihan, Stephane

<120> NOVEL ABCG4 TRANSPORTER AND USES THEREOF

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<140> US

<141> 2002-03-01

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 595 600 605
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 Pro Thr Gly Gly Gly Lys Ser Ser Leu Leu Asp Val Leu Ala Ala Arg

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 Lys Asn Asp Ser Thr Gly Ile Gln Asn Arg Ala Gly Val Leu Phe Phe
 420 425 430
 Leu Thr Thr Asn Gln Cys Phe Ser Ser Val Ser Ala Val Glu Leu Phe
 435 440 445
 Val Val Glu Lys Lys Leu Phe Ile His Glu Tyr Ile Ser Gly Tyr Tyr
 450 455 460
 Arg Val Ser Ser Tyr Phe Leu Gly Lys Leu Leu Ser Asp Leu Leu Pro
 465 470 475 480
 Met Arg Met Leu Pro Ser Ile Ile Phe Thr Cys Ile Val Tyr Phe Met
 485 490 495
 Leu Gly Leu Lys Pro Lys Ala Asp Ala Phe Phe Val Met Met Phe Thr
 500 505 510
 Leu Met Met Val Ala Tyr Ser Ala Ser Ser Met Ala Leu Ala Ile Ala

	515		520		525										
Ala	Gly	Gln	Ser	Val	Val	Ser	Val	Ala	Thr	Leu	Leu	Met	Thr	Ile	Cys
	530					535					540				
Phe	Val	Phe	Met	Met	Ile	Phe	Ser	Gly	Leu	Leu	Val	Asn	Leu	Thr	Thr
545					550					555					560
Ile	Ala	Ser	Trp	Leu	Ser	Trp	Leu	Gln	Tyr	Phe	Ser	Ile	Pro	Arg	Tyr
			565					570						575	
Gly	Phe	Thr	Ala	Leu	Gln	His	Asn	Glu	Phe	Leu	Gly	Gln	Asn	Phe	Cys
			580					585				590			
Pro	Gly	Leu	Asn	Ala	Thr	Gly	Asn	Asn	Pro	Cys	Asn	Tyr	Ala	Thr	Cys
		595					600					605			
Thr	Gly	Glu	Glu	Tyr	Leu	Val	Lys	Gln	Gly	Ile	Asp	Leu	Ser	Pro	Trp
	610					615					620				
Gly	Leu	Trp	Lys	Asn	His	Val	Ala	Leu	Ala	Cys	Met	Ile	Val	Ile	Phe
625				630						635					640
Leu	Thr	Ile	Ala	Tyr	Leu	Lys	Leu	Leu	Phe	Leu	Lys	Lys	Tyr	Ser	
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<211> 651

<212> PRT

<213> Homo sapiens

<400> 6

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		20						25					30		
Pro	Glu	Pro	His	Ser	Leu	Gly	Ile	Leu	His	Ala	Ser	Tyr	Ser	Val	Ser
		35					40					45			
His	Arg	Val	Arg	Pro	Trp	Trp	Asp	Ile	Thr	Ser	Cys	Arg	Gln	Gln	Trp
	50					55					60				
Thr	Arg	Gln	Ile	Leu	Lys	Asp	Val	Ser	Leu	Tyr	Val	Glu	Ser	Gly	Gln
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Ile	Met	Cys	Ile	Leu	Gly	Ser	Ser	Gly	Ser	Gly	Lys	Thr	Thr	Leu	Leu
			85						90					95	
Asp	Ala	Met	Ser	Gly	Arg	Leu	Gly	Arg	Ala	Gly	Thr	Phe	Leu	Gly	Glu
		100						105					110		
Val	Tyr	Val	Asn	Gly	Arg	Ala	Leu	Arg	Arg	Glu	Gln	Phe	Gln	Asp	Cys
		115					120					125			
Phe	Ser	Tyr	Val	Leu	Gln	Ser	Asp	Thr	Leu	Leu	Ser	Ser	Leu	Thr	Val
	130					135					140				
Arg	Glu	Thr	Leu	His	Tyr	Thr	Ala	Leu	Leu	Ala	Ile	Arg	Arg	Gly	Asn
145					150					155					160
Pro	Gly	Ser	Phe	Gln	Lys	Lys	Val	Glu	Ala	Val	Met	Ala	Glu	Leu	Ser
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Leu	Ser	His	Val	Ala	Asp	Arg	Leu	Ile	Gly	Asn	Tyr	Ser	Leu	Gly	Gly
		180						185					190		
Ile	Ser	Thr	Gly	Glu	Arg	Arg	Arg	Val	Ser	Ile	Ala	Ala	Gln	Leu	Leu
		195					200					205			
Gln	Asp	Pro	Lys	Val	Met	Leu	Phe	Asp	Glu	Pro	Thr	Thr	Gly	Leu	Asp
	210						215				220				
Cys	Met	Thr	Ala	Asn	Gln	Ile	Val	Val	Leu	Leu	Val	Glu	Leu	Ala	Arg

225											230						235						240
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Phe	Gln	Leu	Phe	Asp	Lys	Ile	Ala	Ile	Leu	Ser	Phe	Gly	Glu	Leu	Ile								
				260											265						270		
Phe	Cys	Gly	Thr	Pro	Ala	Glu	Met	Leu	Asp	Phe	Phe	Asn	Asp	Cys	Gly								
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Tyr	Pro	Cys	Pro	Glu	His	Ser	Asn	Pro	Phe	Asp	Phe	Tyr	Met	Asp	Leu								
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Thr	Ser	Val	Asp	Thr	Gln	Ser	Lys	Glu	Arg	Glu	Ile	Glu	Thr	Ser	Lys								
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Gly	Val	Leu	Leu	Arg	Arg	Val	Thr	Arg	Asn	Leu	Val	Arg	Asn	Lys	Leu								
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Ala	Val	Ile	Thr	Arg	Leu	Leu	Gln	Asn	Leu	Ile	Met	Gly	Leu	Phe	Leu								
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Leu	Phe	Phe	Val	Leu	Arg	Val	Arg	Ser	Asn	Val	Leu	Lys	Gly	Ala	Ile								
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Gln	Asp	Arg	Val	Gly	Leu	Leu	Tyr	Gln	Phe	Val	Gly	Ala	Thr	Pro	Tyr								
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Thr	Gly	Met	Leu	Asn	Ala	Val	Asn	Leu	Phe	Pro	Val	Leu	Arg	Ala	Val								
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Ser	Asp	Gln	Glu	Ser	Gln	Asp	Gly	Leu	Tyr	Gln	Lys	Trp	Gln	Met	Met								
				450											455						460		
Leu	Ala	Tyr	Ala	Leu	His	Val	Leu	Pro	Phe	Ser	Val	Val	Ala	Thr	Met								
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Ile	Phe	Ser	Ser	Val	Cys	Tyr	Trp	Thr	Leu	Gly	Leu	His	Pro	Glu	Val								
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Ala	Arg	Phe	Gly	Tyr	Phe	Ser	Ala	Ala	Leu	Leu	Ala	Pro	His	Leu	Ile								
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Gly	Glu	Phe	Leu	Thr	Leu	Val	Leu	Leu	Gly	Ile	Val	Gln	Asn	Pro	Asn								
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Ile	Val	Asn	Ser	Val	Val	Ala	Leu	Leu	Ser	Ile	Ala	Gly	Val	Leu	Val								
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Gly	Ser	Gly	Phe	Leu	Arg	Asn	Ile	Gln	Glu	Met	Pro	Ile	Pro	Phe	Lys								
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Ile	Ile	Ser	Tyr	Phe	Thr	Phe	Gln	Lys	Tyr	Cys	Ser	Glu	Ile	Leu	Val								
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Val	Asn	Glu	Phe	Tyr	Gly	Leu	Asn	Phe	Thr	Cys	Gly	Ser	Ser	Asn	Val								
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Ser	Val	Thr	Thr	Asn	Pro	Met	Cys	Ala	Phe	Thr	Gln	Gly	Ile	Gln	Phe								
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<210> 7
 <211> 673
 <212> PRT
 <213> Homo sapiens

<400> 7

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Asp	Asn	Ser	Leu	Tyr	Phe	Thr	Tyr	Ser	Gly	Gln	Pro	Asn	Thr	Leu	Glu
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Val	Arg	Asp	Leu	Asn	Tyr	Gln	Val	Asp	Leu	Ala	Ser	Gln	Val	Pro	Trp
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Phe	Glu	Gln	Leu	Ala	Gln	Phe	Lys	Met	Pro	Trp	Thr	Ser	Pro	Ser	Cys
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Gln	Asn	Ser	Cys	Glu	Leu	Gly	Ile	Gln	Asn	Leu	Ser	Phe	Lys	Val	Arg
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Ser	Gly	Gln	Met	Leu	Ala	Ile	Ile	Gly	Ser	Ser	Gly	Cys	Gly	Arg	Ala
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Ser	Leu	Leu	Asp	Val	Ile	Thr	Gly	Arg	Gly	His	Gly	Gly	Lys	Ile	Lys
		115					120					125			
Ser	Gly	Gln	Ile	Trp	Ile	Asn	Gly	Gln	Pro	Ser	Ser	Pro	Gln	Leu	Val
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Arg	Lys	Cys	Val	Ala	His	Val	Arg	Gln	His	Asn	Gln	Leu	Leu	Pro	Asn
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Leu	Thr	Val	Arg	Glu	Thr	Leu	Ala	Phe	Ile	Ala	Gln	Met	Arg	Leu	Pro
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Arg	Thr	Phe	Ser	Gln	Ala	Gln	Arg	Asp	Lys	Arg	Val	Glu	Asp	Val	Ile
			180					185					190		
Ala	Glu	Leu	Arg	Leu	Arg	Gln	Cys	Ala	Asp	Thr	Arg	Val	Gly	Asn	Met
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Tyr	Val	Arg	Gly	Leu	Ser	Gly	Gly	Glu	Arg	Arg	Arg	Val	Ser	Ile	Gly
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Val	Gln	Leu	Leu	Trp	Asn	Pro	Gly	Ile	Leu	Ile	Leu	Asp	Glu	Pro	Thr
225					230					235					240
Ser	Gly	Leu	Asp	Ser	Phe	Thr	Ala	His	Asn	Leu	Val	Lys	Thr	Leu	Ser
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Arg	Leu	Ala	Lys	Gly	Asn	Arg	Leu	Val	Leu	Ile	Ser	Leu	His	Gln	Pro
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Gly	Thr	Pro	Ile	Tyr	Leu	Gly	Ala	Ala	Gln	His	Met	Val	Gln	Tyr	Phe
	290					295					300				
Thr	Ala	Ile	Gly	Tyr	Pro	Cys	Pro	Arg	Tyr	Ser	Asn	Pro	Ala	Asp	Phe
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Tyr	Val	Asp	Leu	Thr	Ser	Ile	Asp	Arg	Arg	Ser	Arg	Glu	Gln	Glu	Leu
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Ala	Thr	Arg	Glu	Lys	Ala	Gln	Ser	Leu	Ala	Ala	Leu	Phe	Leu	Glu	Lys
			340					345					350		
Val	Arg	Asp	Leu	Asp	Asp	Phe	Leu	Trp	Lys	Ala	Glu	Thr	Lys	Asp	Leu
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Asp	Glu	Asp	Thr	Cys	Val	Glu	Ser	Ser	Val	Thr	Pro	Leu	Asp	Thr	Asn

370 375 380
 Cys Leu Pro Ser Pro Thr Lys Met Pro Gly Ala Val Gln Gln Phe Thr
 385 390 395 400
 Thr Leu Ile Arg Arg Gln Ile Ser Asn Asp Phe Arg Asp Leu Pro Thr
 405 410 415
 Leu Leu Ile His Gly Ala Glu Ala Cys Leu Met Ser Met Thr Ile Gly
 420 425 430
 Phe Leu Tyr Phe Gly His Gly Ser Ile Gln Leu Ser Phe Met Asp Thr
 435 440 445
 Ala Ala Leu Leu Phe Met Ile Gly Ala Leu Ile Pro Phe Asn Val Ile
 450 455 460
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 465 470 475 480
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 485 490 495
 Ile Leu Gly Glu Leu Pro Glu His Cys Ala Tyr Ile Ile Ile Tyr Gly
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 Met Pro Thr Tyr Trp Leu Ala Asn Leu Arg Pro Gly Leu Gln Pro Phe
 515 520 525
 Leu Leu His Phe Leu Leu Val Trp Leu Val Val Phe Cys Cys Arg Ile
 530 535 540
 Met Ala Leu Ala Ala Ala Ala Leu Leu Pro Thr Phe His Met Ala Ser
 545 550 555 560
 Phe Phe Ser Asn Ala Leu Tyr Asn Ser Phe Tyr Leu Ala Gly Gly Phe
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 Met Ile Asn Leu Ser Ser Leu Trp Thr Val Pro Ala Trp Ile Ser Lys
 580 585 590
 Val Ser Phe Leu Arg Trp Cys Phe Glu Gly Leu Met Lys Ile Gln Phe
 595 600 605
 Ser Arg Arg Thr Tyr Lys Met Pro Leu Gly Asn Leu Thr Ile Ala Val
 610 615 620
 Ser Gly Asp Lys Ile Leu Ser Val Met Glu Leu Asp Ser Tyr Pro Leu
 625 630 635 640
 Tyr Ala Ile Tyr Leu Ile Val Ile Gly Leu Ser Gly Gly Phe Met Val
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 Trp

<210> 8
 <211> 627
 <212> PRT
 <213> Homo sapiens

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 His Leu Pro Lys Arg Ser Ala Val Asp Ile Glu Phe Val Glu Leu Ser
 35 40 45
 Tyr Ser Val Arg Glu Gly Pro Cys Trp Arg Lys Arg Gly Tyr Lys Thr

50 55 60
 Leu Leu Lys Cys Leu Ser Gly Lys Phe Cys Arg Arg Glu Leu Ile Gly
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 Ile Met Gly Pro Ser Gly Ala Gly Lys Ser Thr Phe Met Asn Ile Leu
 85 90 95
 Ala Gly Tyr Arg Glu Ser Gly Met Lys Gly Gln Ile Leu Val Asn Gly
 100 105 110
 Arg Pro Arg Glu Leu Arg Thr Phe Arg Lys Met Ser Cys Tyr Ile Met
 115 120 125
 Gln Asp Asp Met Leu Leu Pro His Leu Thr Val Leu Glu Ala Met Met
 130 135 140
 Val Ser Ala Asn Leu Lys Leu Ser Glu Lys Gln Glu Val Lys Lys Glu
 145 150 155 160
 Leu Val Thr Glu Ile Leu Thr Ala Leu Gly Leu Met Ser Cys Ser His
 165 170 175
 Thr Arg Thr Ala Leu Leu Ser Gly Gly Gln Arg Lys Arg Leu Ala Ile
 180 185 190
 Ala Leu Glu Leu Val Asn Asn Pro Pro Val Met Phe Phe Asp Glu Pro
 195 200 205
 Thr Ser Gly Leu Asp Ser Ala Ser Cys Phe Gln Val Val Ser Leu Met
 210 215 220
 Lys Ser Leu Ala Gln Gly Gly Arg Thr Ile Ile Cys Thr Ile His Gln
 225 230 235 240
 Pro Ser Ala Lys Leu Phe Glu Met Phe Asp Lys Leu Tyr Ile Leu Ser
 245 250 255
 Gln Gly Gln Cys Ile Phe Lys Gly Val Val Thr Asn Leu Ile Pro Tyr
 260 265 270
 Leu Lys Gly Leu Gly Leu His Cys Pro Thr Tyr His Asn Pro Ala Asp
 275 280 285
 Phe Ile Ile Glu Val Ala Ser Gly Glu Tyr Gly Asp Leu Asn Pro Met
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 Leu Phe Arg Ala Val Gln Asn Gly Leu Cys Ala Met Ala Glu Lys Lys
 305 310 315 320
 Ser Ser Pro Glu Lys Asn Glu Val Pro Ala Pro Cys Pro Pro Cys Pro
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 Pro Glu Val Asp Pro Ile Glu Ser His Thr Phe Ala Thr Ser Thr Leu
 340 345 350
 Thr Gln Phe Cys Ile Leu Phe Lys Arg Thr Phe Leu Ser Ile Leu Arg
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 Asp Thr Val Leu Thr His Leu Arg Phe Met Ser His Val Val Ile Gly
 370 375 380
 Val Leu Ile Gly Leu Leu Tyr Leu His Ile Gly Asp Asp Ala Ser Lys
 385 390 395 400
 Val Phe Asn Asn Thr Gly Cys Leu Phe Phe Ser Met Leu Phe Leu Met
 405 410 415
 Phe Ala Ala Leu Met Pro Thr Val Leu Thr Phe Pro Leu Glu Met Ala
 420 425 430
 Val Phe Met Arg Glu His Leu Asn Tyr Trp Tyr Ser Leu Lys Ala Tyr
 435 440 445
 Tyr Leu Ala Lys Thr Met Ala Asp Val Pro Phe Gln Val Val Cys Pro
 450 455 460
 Val Val Tyr Cys Ser Ile Val Tyr Trp Met Thr Gly Gln Pro Ala Glu
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 Gln Val Ala Thr Phe Val Gly Pro Val Thr Ala Ile Pro Val Leu Leu
 515 520 525
 Phe Ser Gly Phe Phe Val Ser Phe Lys Thr Ile Pro Thr Tyr Leu Gln
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 Trp Ser Ser Tyr Leu Ser Tyr Val Arg Tyr Gly Phe Glu Gly Val Ile
 545 550 555 560
 Leu Thr Ile Tyr Gly Met Glu Arg Gly Asp Leu Thr Cys Leu Glu Glu
 565 570 575
 Arg Cys Pro Phe Arg Glu Pro Gln Ser Ile Leu Arg Ala Leu Asp Val
 580 585 590
 Glu Asp Ala Lys Leu Tyr Met Asp Phe Leu Val Leu Gly Ile Phe Phe
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<210> 11

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<212> PRT

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<210> 12

<211> 2687

<212> DNA

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<400> 12

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<211> 646

<212> PRT

<213> Homo sapiens

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 <222> 579, 598
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Leu	Thr	Thr	His	Leu	Lys	Lys	Val	Glu	Asn	His	Ile	Thr	Glu	Ala	Gln
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Arg	Phe	Ser	His	Leu	Pro	Lys	Arg	Ser	Ala	Val	Asp	Ile	Glu	Phe	Val
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Glu	Leu	Ser	Tyr	Ser	Val	Arg	Glu	Gly	Pro	Cys	Trp	Arg	Lys	Arg	Gly
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Tyr	Lys	Thr	Leu	Leu	Lys	Cys	Leu	Ser	Gly	Lys	Phe	Cys	Arg	Arg	Glu
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Leu	Ile	Gly	Ile	Met	Gly	Pro	Ser	Gly	Ala	Gly	Lys	Ser	Thr	Phe	Met
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Asn	Ile	Leu	Ala	Gly	Tyr	Arg	Glu	Ser	Gly	Met	Lys	Gly	Gln	Ile	Leu
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Val	Asn	Gly	Arg	Pro	Arg	Glu	Leu	Arg	Thr	Phe	Arg	Lys	Met	Ser	Cys
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Tyr	Ile	Met	Gln	Asp	Asp	Met	Leu	Leu	Pro	His	Leu	Thr	Val	Leu	Glu
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Ala	Met	Met	Val	Ser	Ala	Asn	Leu	Lys	Leu	Ser	Glu	Lys	Gln	Glu	Val
				165					170					175	
Lys	Lys	Glu	Leu	Val	Thr	Glu	Ile	Leu	Thr	Ala	Leu	Gly	Leu	Met	Ser
			180					185					190		
Cys	Ser	Arg	Thr	Arg	Thr	Ala	Leu	Leu	Ser	Gly	Gly	Gln	Arg	Lys	Arg
		195					200					205			
Leu	Ala	Ile	Ala	Leu	Glu	Leu	Val	Asn	Asn	Pro	Pro	Val	Met	Phe	Phe
	210					215					220				
Asp	Glu	Pro	Thr	Ser	Gly	Leu	Asp	Ser	Ala	Ser	Cys	Phe	Gln	Val	Val
225					230				235						240
Ser	Leu	Met	Lys	Ser	Leu	Ala	Gln	Gly	Gly	Arg	Thr	Ile	Ile	Cys	Thr
				245					250					255	
Ile	His	Gln	Pro	Ser	Ala	Lys	Leu	Phe	Glu	Met	Phe	Asp	Lys	Leu	Tyr
			260					265					270		
Ile	Leu	Ser	Gln	Gly	Gln	Cys	Ile	Phe	Lys	Gly	Val	Val	Thr	Asn	Leu
	275						280					285			
Ile	Pro	Tyr	Leu	Lys	Gly	Leu	Gly	Leu	His	Cys	Pro	Thr	Tyr	His	Asn
	290					295					300				
Pro	Ala	Asp	Phe	Ile	Ile	Glu	Val	Ala	Ser	Gly	Glu	Tyr	Gly	Asp	Leu
305					310					315					320
Asn	Pro	Met	Leu	Phe	Arg	Ala	Val	Gln	Asn	Gly	Leu	Cys	Ala	Met	Ala
				325					330					335	
Glu	Lys	Lys	Ser	Ser	Pro	Glu	Lys	Asn	Glu	Val	Pro	Ala	Pro	Cys	Pro
			340					345					350		
Pro	Cys	Pro	Pro	Glu	Val	Asp	Pro	Ile	Glu	Ser	His	Thr	Phe	Ala	Thr
		355					360					365			
Ser	Thr	Leu	Thr	Gln	Phe	Cys	Ile	Leu	Phe	Lys	Arg	Thr	Phe	Leu	Ser

370 375 380
 Ile Leu Arg Asp Thr Val Leu Thr His Leu Arg Phe Met Ser His Val
 385 390 395 400
 Val Ile Gly Val Leu Ile Gly Leu Leu Tyr Leu His Ile Gly Asp Asp
 405 410 415
 Ala Ser Lys Val Phe Asn Asn Thr Gly Cys Leu Phe Phe Ser Met Leu
 420 425 430
 Phe Leu Met Phe Ala Ala Leu Met Pro Thr Val Leu Thr Phe Pro Leu
 435 440 445
 Glu Met Ala Val Phe Met Arg Glu His Leu Asn Tyr Trp Tyr Ser Leu
 450 455 460
 Lys Ala Tyr Tyr Leu Ala Lys Thr Met Ala Asp Val Pro Phe Gln Val
 465 470 475 480
 Val Cys Pro Val Val Tyr Cys Ser Ile Val Tyr Trp Met Thr Gly Gln
 485 490 495
 Pro Ala Glu Thr Ser Arg Phe Leu Leu Phe Ser Ala Leu Ala Thr Ala
 500 505 510
 Thr Ala Leu Val Ala Gln Ser Leu Gly Leu Leu Ile Gly Ala Ala Ser
 515 520 525
 Asn Ser Leu Gln Val Ala Thr Phe Val Gly Pro Val Thr Ala Ile Pro
 530 535 540
 Val Leu Leu Phe Ser Gly Phe Phe Val Ser Phe Lys Thr Ile Pro Thr
 545 550 555 560
 Tyr Leu Gln Trp Ser Ser Tyr Leu Ser Tyr Val Arg Tyr Gly Phe Glu
 565 570 575
 Gly Val Xaa Leu Thr Ile Tyr Gly Met Glu Arg Gly Asp Leu Thr Cys
 580 585 590
 Leu Glu Glu Arg Cys Xaa Phe Arg Glu Pro Gln Ser Ile Leu Arg Ala
 595 600 605
 Leu Asp Val Glu Asp Ala Lys Leu Tyr Met Asp Phe Leu Val Leu Gly
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23

seq: ggtccaccc